**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

KAPELIOUCHKO et al

Group Art Unit: Not yet assigned

Application No.: New Application

Examiner: Not yet assigned

Filed: August 20, 2001

Attorney Dkt. No.: 108910-00042

For: A PTFE-BASED FORMULATION FOR THE INSULATION OF INTEGRATED CIRCUITS

**PRELIMINARY AMENDMENT**

Commissioner for Patents
Washington, D.C. 20231

August 20, 2001

Sir:

Prior to calculation of the filing fee and prior to initial examination of the application, please amend the above-identified application as follows:

**IN THE CLAIMS**:

Please amend claims 4, 5, 7, 12, 14, and 15 as follows. A copy of the marked up original claims is attached to this response showing the changes as set forth in amended 37 CFR 1.121.

4. (Amended) A formulation according to claim 1, wherein the compounds of formula (IA) are used in admixture with the following anionic surfactants:

$CF_3(CF_2)_nCOOM$ (IIA)

wherein n can range between 4 and 12,

$$F\text{-}(CF_2\text{-}CF_2)_n\text{ - }CH_2\text{-}CH_2\text{-}SO_3M \qquad \text{(IIIA)}$$

wherein M=H, $NH_4$, Na, Li, K and n can range between 2 and 5.

5. (Amended) A formulation according to claim 1, wherein the non ionic fluorinated surfactants added to the PTFE polymerization latex have the following structures:

$$CF_3(CF_2)_y\text{ - L-}R_h \qquad y=3\text{-}20 \qquad \text{(IB)}$$

$$T\text{-O-}R_f\text{ - L-}R_h \qquad \text{(IIB)}$$

wherein:

$R_f$ is selected from the structures (a), (b), (c), (d), (e), (f) of claim 2;

L is a divalent organic group, a linking group between $R_f$ and $R_h$, selected from: -CO-$NR^1$-, $-CH_2(OCH_2CHR^2)_a$-O-, $-CH_2(OCH_2CHR^2)_b$-O-CO-, $-CH_2O-(CH_2)_c$-CO-O-, $-CH_2$-$CH_2$-O-, $-CH_2$-$CH_2$-; wherein $R^1$ is -H or a $C_1$-$C_4$ alkyl; $R^2$ is -H or a $C_1$-$C_2$ alkyl; a, b are numbers from 0 to 6, preferably from 0 to 2; C is a number from 1 to 3;

$R_h$ is a radical having a polyoxyalkylene structure selected from:

(i) $-(CH_2CH_2O)_qCH_2CH_2Z$, wherein: q is an integer from 5 to 70, preferably from 6 to 25; Z is selected from -OH, $C_1$-$C_4$ alkoxy;

(ii) $-(CH_2CH_2O)_r(CH_2CH(CH_3)O)_sCH_2CHR^3Z$, wherein r+s is an integer from 5 to 70, preferably from 10 to 50; the r/s ratio is in the range 0.1-10, preferably 0.5-5; $R^3$ is selected between -H and $-CH_3$; Z is selected between -OH, $C_1$-$C_4$ alkoxy.

7. (Amended) A formulation according to claim 1, wherein the PTFE is modified with one or more comonomers containing at least one unsaturation of ethylene type in an amount up to 6% molar, preferably up to 1% molar.

12. (Amended) Dielectric films obtained from the formulation according to claim 1, by the deposition of the formulation on a substratum, subsequent film sintering at a temperature higher than the PTFE melting T and subsequent air-cooling.

14. (Amended) Dielectric films according to claim 12 having a thickness lower than 200 nm, preferably in the range 50 nm - 150 nm, a dielectric constant lower than 2.2, a dielectric strength higher than 4 MV/cm and a weight loss at 425°C in the range 0.0008 - 0.02%/min.

15. (Amended) Use of dielectric films according to claim 12 for the insulation of conductors in integrated circuits.

## REMARKS

Claims 1-15 are pending in this application. By this Amendment, claims 4, 5, 7, 12, 14, and 15 are amended to delete multiple dependency. No new matter is contained in the amendments. Timely examination on the merits is respectfully requested.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300.

Respectfully submitted,

Douglas H. Goldhush
Registration No. 33,125

**Customer No. 004372**
ARENT FOX KINTNER PLOTKIN & KAHN, PLLC
1050 Connecticut Avenue, N.W.,
Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6000
Fax: (202) 638-4810

DHG:scc

Enclosure: Marked-up Copy of Amended Claims

**MARKED-UP COPY OF AMENDED CLAIMS 4, 5, 7, 12, 14 AND 15**
**Atty. Docket No.: 108910-00042**

4. (Amended) A formulation according to [claims 1-3] claim 1, wherein the compounds of formula (IA) are used in admixture with the following anionic surfactants:

$CF_3(CF_2)_nCOOM$ (IIA)

wherein n can range between 4 and 12,

$F\text{-}(CF_2\text{-}CF_2)_n\text{ - }CH_2\text{-}CH_2\text{-}SO_3M$ (IIIA)

wherein M=H, $NH_4$, Na, Li, K and n can range between 2 and 5.

5. (Amended) A formulation according to [claims 1-4] claim 1, wherein the non ionic fluorinated surfactants added to the PTFE polymerization latex have the following structures:

$CF_3(CF_2)_y\text{ - L-}R_h$ y=3-20 (IB)

$T\text{-O-}R_f\text{ - L-}R_h$ (IIB)

wherein:

$R_f$ is selected from the structures (a), (b), (c), (d), (e), (f) of claim 2;

L is a divalent organic group, a linking group between $R_f$ and $R_h$, selected from: -CO-$NR^1$-, $-CH_2(OCH_2CHR^2)_a$-O-, $-CH_2(OCH_2CHR^2)_b$-O-CO-, $-CH_2O-(CH_2)_c$-CO-O-, $-CH_2$-$CH_2$-O-, $-CH_2$-$CH_2$-; wherein $R^1$ is -H or a $C_1$-$C_4$ alkyl; $R^2$ is -H or a $C_1$-$C_2$ alkyl; a, b are numbers from 0 to 6, preferably from 0 to 2; C is a number from 1 to 3;

$R_h$ is a radical having a polyoxyalkylene structure selected from:

(i) $-(CH_2CH_2O)_qCH_2CH_2Z$, wherein: q is an integer from 5 to 70, preferably from 6 to 25; Z is selected from -OH, $C_1$-$C_4$ alkoxy;

(ii) $-(CH_2CH_2O)_r(CH_2CH(CH_3)O)_sCH_2CHR^3Z$, wherein r+s is an integer from 5 to 70, preferably from 10 to 50; the r/s ratio is in the range 0.1-10, preferably 0.5-5; $R^3$ is selected between -H and $-CH_3$; Z is selected between -OH, $C_1$-$C_4$ alkoxy[;].

7. (Amended) A formulation according to [claims 1-6] claim 1, wherein the PTFE is modified with one or more comonomers containing at least one unsaturation of ethylene type in an amount up to 6% molar, preferably up to 1% molar.

12. (Amended) Dielectric films obtained from the formulation according to [claims 1-11] claim 1, by the deposition of the formulation on a substratum, subsequent film sintering at a temperature higher than the PTFE melting T and subsequent air-cooling.

14. (Amended) Dielectric films according to [claims 12-13] claim 12 having a thickness lower than 200 nm, preferably in the range 50 nm - 150 nm, a dielectric constant lower than 2.2, a dielectric strength higher than 4 MV/cm and a weight loss at 425°C in the range 0.0008 - 0.02%/min.

15. (Amended) Use of dielectric films according to [claims 12-14] claim 12 for the insulation of conductors in integrated circuits.